C. H. LOVE

METALLIC PACKING FOR PISTON RODS

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2 Sheets-Sheet 2

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METALLIC PACKING FOR PISTON RODS.

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To all whom it may concern:

Be it known that I, Charles H. Love, a citizen of the United States, residing at Mattoon, in the county of Coles and State of Illinois, have invented certain new and useful improvements in Metallic Packings for Piston Rods, of which the following is a specification.

My invention relates to a self-adjusting metallic packing for piston rods, valve-stems, which may be used in connection with the ordinary packing boxes now in use without change of construction in said stuffing-boxes or glands, said improved packing being simple, inexpensive and efficient in construction, the pressure upon the piston rods or valve-stems being regulated so as to insure a steam or air-tight joint without producing unnecessary frictional contact between the co-acting parts.

In the accompanying drawings:

Fig. 1 is a longitudinal section of a packing-box embodying my arrangement of packing;

Fig. 2 is a transverse sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a detail view showing a channel frame and packing-ring;

Fig. 4 is a detail sectional view of a channel frame; and

Fig. 5 is a detail perspective view of one of the packing-ring springs.

The numeral 1 indicates the cylinder-head or body portion of a stuffing-box; 2, the inner annular flange thereof; and 3, the gland secured by bolts 4, 4 to the stuffing-box 2. The numeral 5 indicates a piston-rod having an enlarged head 6.

Assembled in the stuffing-box in the relation hereinafter described, are the annular casing-rings 7 and 8. These casing-rings have inner faces 9 and 10, respectively, of sufficient diameter to pass over the head 6 of the piston-rod 5. The inner casing-ring 7 is provided with an annular groove 11 to receive a copper wire 12 adapted to fit snugly against the inner wall of the stuffing-box. The opposite face of the casing ring 7 is counterbored to form an annular recess or channel 13, while the outer circumference is turned down to form an annular groove 14 and protruding ring 15. The casing-ring 8 is counterbored on its face adjacent the casing-ring 7 forming an annular channel 16 of sufficient diameter to receive the protruding ring 15 of the casing-ring 7. The protruding end of the casing 8 overlaps the annular ring 15 of the casing-ring 7, forming between the two casing-rings 7 and 8 a packing-ring chamber 17.

The opposite face of the casing-ring 8 is counterbored to form a second packing-ring chamber 18, and turned down on its outer circumference to form an annular groove 19 and a projecting ring 20. The numeral 21 indicates a cap-ring having an inner face 22 of sufficient diameter to pass over the head 6 of the piston-rod 5. The inner face of the cap-ring 21 adjacent the casing-ring 8 is counterbored and provided with an annular projection 22' to be received in the annular groove 19 of the casing-ring 8, overlapping the projecting ring 20 forming a tight joint. The outer face of the cap ring 21 has a finished surface 23 forming a tight joint between the cap-ring and the gland 3.

Received in the packing-ring chambers 17 and 18 are the metallic packing-rings 24—24, each of which consists of two members 25, formed as clearly shown in Fig. 2. Each member is provided with a circumferential groove 26. Received in each groove is a flat spring 27, each being arranged diametrically opposite each other in its respective groove. Each flat spring 27 is secured to its respective packing ring member by a pin 28 formed on the flat springs, said pin being received in a hole 29 in the packing-ring. The outer ends of the flat springs 27 are rounded in order to adjust themselves to the inner walls of the packing-chambers.

The packing-ring chamber 17 is of sufficient width to receive a metallic packing-ring. The packing ring chamber 18, however, is of sufficient width to receive the metallic packing-ring 24 and a metallic L-shaped joint ring 30, preferably made in halves, the inner diameter of which is such as to form a comparatively tight fit with the piston 5. Interposed between the joint ring 30 and the inner face of the cap-ring 21 is a second joint ring 31, preferably made of one piece having an inner face 32 of sufficient diameter to pass over the head 6 of the piston 5, and to receive the protruding end of the joint ring 30.

It will thus be seen that I have produced a packing which can be assembled in the usual stuffing-box without any alterations.
and one where it is only necessary to renew the packing-rings when worn out, and that I have eliminated the use of retaining rings and coil springs.

5 Various other advantages of the improved packing are obvious to those familiar with the art to which the invention pertains, and it will be understood that various changes in the form, proportion and minor details of construction may be resorted to without departing from the scope of the invention or sacrificing any of the advantages thereof.

I claim:

In a device of the character described, the combination with a piston rod, a hollow casing, and a gland secured thereto, of substantially L-shaped inner and outer casing rings interposed between the hollow casing and the gland, the inner extensions of said casing rings having openings therethrough of sufficient size to allow the passage of the piston rod, the inner casing ring having a groove on one side thereof, a ring received in said groove, each of said inner and outer casing rings having flanges extending outwards in the same direction therefrom, said flanges having circumferential grooves formed at the outer edges thereof, an inwardly extending flange formed on the outer casing ring and received in the groove in the inner casing ring, forming an internal chamber with-

in said inner casing ring, a cap ring interposed between the outer casing ring and the gland and having an inwardly extending flange received within the groove formed in the outer casing ring, forming an internal chamber within said outer casing ring of a greater width than the first-mentioned chamber, sectional packing rings closely embracing the piston rod within the internal chambers, a substantially L-shaped sectional joint ring embracing the piston rod and interposed between the outer packing ring and the cap ring within the wider internal chamber, a second joint ring fitted over and embracing a portion of said sectional joint ring and interposed between said sectional joint ring and the cap ring, said packing rings having circumferential grooves in the peripheries thereof, and having radial holes extending inwardly at points within the grooves, segmental springs received within said grooves and having the outer free ends thereof engaging the walls of the internal chambers for holding the springs within the grooves for compressing the packing rings, and dowel pins secured to the springs and extending into the holes for holding said springs against endwise movement.

In testimony whereof I affix my signature.

CHARLES H. LOVE.